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ABSTRACT

This paper examines issues that affect decisions about providing language for a deaf or hard of hearing child. It considers what has been learned where parent-infant support and early educational placements are characterized by efforts to expose deaf children, of both deaf and hearing parents, to whole language/s that children find accessible for face-to-face interaction. Also discussed is what has been learned from interviewing and observing parents, teachers, researchers, and deaf students in settings in Sweden and Denmark where efforts in this direction have resulted in graduates whose achievement and literacy levels are on par with their hearing peers. In these countries, it is the child's predisposition toward a more oral or more visual language that determines the choice of a first language. Topics discussed include different paths to bilingualism; emphasis on the whole child; observing the child's behavior in natural communicative settings; cognitive academic language proficiency; the importance of high expectations; speech skills; a cost-benefit perspective; residual hearing; critical periods and spoken language; critical periods and sign language; and the importance of natural language. (Contains approximately 60 references.) (DB)

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A First Language: Whose Choice Is It?

by Shawn Neal Mahshie

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An Introduction to the Sharing Ideas Series

The Laurent Clerc National Deaf Education Center's "Sharing Ideas" series comprises working or occasional papers and videos of interest to parents and teachers of deaf and hard of hearing children, researchers, school administrators, support service personnel, and policy makers. Works in the series are often prepared for a specific 'occasion,' and include papers, presentations, or final reports that address a need in the field or contribute to the growing body of knowledge about educating deaf and hard of hearing children. The intent of the series is to act as a clearinghouse for sharing information from a number of sources.

These widely disseminated papers cover a broad range of timely topics, from describing innovative teaching strategies to reviewing the literature in an area of inquiry to summarizing the results of a research study. In every case, there is a common focus: improving the quality of education for children who are deaf or hard of hearing. The Clerc Center welcomes feedback about the concepts presented, particularly in the case of 'working papers,' which often represent works in progress or express the views or experiences of an author.

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About the Author

Shawn Neal Mahshie has conducted two studies to gather information about bilingual education of Deaf children in Denmark and Sweden, countries that began providing academic instruction in Sign Language in the early 1980s. Her book, Educating Deaf Children Bilingually (Mahshie, 1995), has received national attention in the United States and is being translated into several languages. Ms. Mahshie, who has a B.A. in Elementary Education and an M.A. in Linguistics, taught for a number of years before going to work under William Stokoe and Dennis Cokely in Gallaudet's Linguistics Research Laboratory. She later became coordinator of research publications in the Gallaudet Research Institute and has worked as managing editor for Gallaudet University's Laurent Clerc National Deaf Education Center since 1991.

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Introduction

A full-fledged system of language to rely on for classroom communication and analytical thinking—and as a foundation for emerging literacy—is an indispensable tool for any child starting first grade. In order to achieve a level of readiness for their social and scholastic challenges, children who are deaf or hard of hearing—like all children—must be surrounded very early in life by language that is fully accessible to them as a model for acquiring solid competency in their first language.

In order to provide this access, some very important decisions about linguistic input to the young deaf or hard of hearing child must be made early by hearing parents of deaf children if they are to ensure their child's timely development. Yet, it is well-documented that there is rarely enough information to determine the predisposition of a deaf infant to develop intelligible speech at the time when decisions must be made about degree of exposure to signed and spoken language as models for the child's first language development.

This paper looks at some of the issues that affect decisions about providing language input for a deaf or hard of hearing child. (Portions of this paper are excerpted from the book Educating Deaf Children Bilingually (Mahshie, 1995). The focus of the discussion will be on describing what has been learned from environments where parent-infant support and early educational placements are characterized by efforts to expose deaf children—of both hearing and deaf parents—to whole language(s) that the children find accessible for face-to-face interaction. The discussion will also include the research-based foundations for this practice. Much of the description and examples will center around what has been learned by interviewing and observing parents, teachers, researchers, and deaf students in settings in Sweden and Denmark, where efforts focused in this direction have resulted in graduates whose achievement and literacy levels are on par with their hearing peers (Lewis, 1995; Salander, S. & Svedenfors, B., 1993; Savrtholm, K., 1994). As these countries have been officially moving in the direction of educating deaf children bilingually since the early 1980's, the attributes that are present in their systems have yielded a population of deaf children and parents with unique experiences, making these settings an important environment from which to learn.

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A Win-Win Situation

For many Deaf children of hearing parents in Sweden and Denmark, childhood is a relaxed, play-oriented time that—by nature—includes spoken language, and—by design—includes signed language. In environments where the deaf child encounters both spoken and signed language separately—as whole languages—during the course of natural interactions, it has become apparent to both parents and professionals that the child will be the guide regarding his or her predisposition toward a more oral or more visual language. In this win-win situation, the choice of a first language is clearly the child's. In the United States, decisions about first language input for the deaf child often weigh very heavily on parents, who may feel they have to make a choice between spoken and signed language as primary input for their child's development of early language. However, based on experience in Sweden and Denmark, it has become clear that the pressure experienced by hearing parents can be substantially diminished, and that these two choices need not be mutually exclusive. Much of the panic that parents experience seems to subside when there is a clear focus among professionals who give early advice to parents on 1) natural, timely acquisition of language (and its subsequent influence on cognitive and social functioning), and 2) the crucial role of well-developed literacy in the majority language in Deaf peoples' successful participation in hearing society.

In these two countries, it is widely accepted to be the right of Deaf* children to acquire a first language naturally and "on schedule." The objective for most Deaf children is that the language which is not acquired naturally will be learned as a second language as the child becomes cognitively/developmentally ready. Rather than being presented with options that are mutually exclusive, parents are shown a model that is ideally infused with all the options—signed, written, and spoken language—at developmentally appropriate times. In this model, the importance of letting deaf children "be children"—which includes acquiring their first language in a natural, timely manner—helps to guide choices about the focus of language input and early placement.

* For the remainder of the book, which focuses on a model that views deaf children and their language differently from the current monolingual model, conventions are applied in labeling deaf and hard of hearing children that tend to differ from current usage in the U.S. In general, a Deaf child or adult is, in this context, considered to be "one for whom the primary receptive channel of communication is visual." The reader is encouraged to refer to Mahshie (1995, p. 209-213), which describes specific references to "Deaf," "deaf," and "hard of hearing" children.

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Different Paths to Bilingualism

While the ultimate goal is that the children become bilingual adults, it is acknowledged that there is more than one path to that goal. Early support is configured so that many Deaf children in Sweden, for example, enter first grade with knowledge of Swedish Sign Language and written Swedish, gained through face-to-face interaction and frequent exposure to text through storybook sharing, fingerspelling, and environmental print. Others are reported to arrive with some grasp of the spoken language as well, even though little or no formal teaching of speech was reported in the preschools. Still other children who are hard of hearing have sufficient auditory perception to learn the spoken language sufficiently for regular use with hearing people in face-to-face interaction, as well as knowing Sign Language. (The term Sign Language is used as a general reference to the language(s) used by Deaf communities.) For example, some of the children in a longitudinal study through Stockholm University's Department of Psychology were described by the investigator as follows:

Some of the hard of hearing preschoolers used primarily Sign Language with their peers and deaf, hard of hearing, or hearing teachers in preschools, and had enough command of spoken Swedish to use with their parents, siblings, and with hearing peers in their neighborhood. They modified their way of communicating depending on the partner's prerequisites, i.e., they signed with signing peers and used spoken language with those who used speech (M. Ahlström, 1994).

Although these children were diagnosed with fairly mild hearing losses, it is important to note that their parents, who agreed to be part of the study, began learning and using Sign Language very soon after the childrens' hearing loss was discovered.

Other paths to bilingualism include those children that have sufficient auditory perception to acquire spoken Swedish/Danish as a first language who may be placed in a preschool with hearing children or other hard of hearing children. Some of these children also become bilingual because of their parents' efforts to see that they interact with Deaf playmates and adults who use Sign Language.

Reference here to the choice of a first language simply means that we closely observe and evaluate each child to see how he or she functions in both academic and social settings with each language. Or, as one preschool teacher at Kendall Demonstration Elementary School in Washington, D.C. put it:

When it comes to language, kids will eventually show you where their strengths and weaknesses lie. If you're really watching them, they're going to let you know what they need and what they can and can't do (L. Erting, personal communication, July 22, 1994).

In those instances where the child's hearing loss is mild enough that both languages can be learned through natural processes of interaction (rather than training), the effects of this early bilingualism are not considered a threat to the child's development of spoken or signed language but rather a positive factor in the child's overall development (Preisler,

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1983, 1990). Cummins and Swain (1986) cite numerous studies conducted since the early 1960s reporting that bilingual children function at a significantly higher level than monolingual children on various measures of cognitive abilities. In a similar vein, Daniels (1993) found that hearing children whose first language was Sign Language had English skills superior to their monolingual peers. In other words, exposing a hard of hearing child to Sign Language early is not considered to be risky or detrimental (Ahlström, in press; Preisler, 1983, 1990). Rather, for those hard of hearing children who do have enough access to the spoken signal to acquire speech naturally, the benefits of early bilingualism in the spoken language of the home and the signed language of the Deaf community are considered to be an asset for the child.

The Whole Child

In general, balanced bilingualism is rare (Grosjean, 1992). Even in an environment such as these children had, it is unlikely that both spoken and signed language will be acquired in a parallel or equivalent fashion, simply because of issues related to accessibility (see discussion on critical period). In the far more frequent instances in which the child evidences some natural acquisition of speech skills, but is not likely to thrive in a speech-only educational environment, keeping the spotlight on the whole child is crucial in guiding decisions about the focus of language input. Preschool teachers and speech therapists (in bilingual preschools in both the U.S. and in Sweden) felt it was critical to foster development of these children's visual attention, as well as their receptive and expressive skills in Sign Language. It is recognized that these children's later academic and social functioning, as well as their ability to become fluent in the majority language through literacy, will rely heavily on solid language competence and ability to readily comprehend classroom instruction in Sign Language. Many teachers I interviewed felt that the importance of building visual attention and Sign Language competence cannot be over-emphasized in facilitating the normal development of the whole child. The comments of Sharon Graney, speech pathologist at the Sterck School in Delaware, are consistent with those of teachers of very young children in Sweden, Denmark, and at Kendall Demonstration Elementary School: Some of the hard of hearing children may be getting 60, 70, 80% here [points to her ears], but we know they can get 100% here [points to her eyes]; that's another reason we turn off our voices. It takes a while for them to become visual, but once they get it, then they learn that they can choose to give attention to different kinds of auditory and visual stimuli....

Sharpening children's visual skills seems to help their attention to both spoken and signed language. The children have to be very tuned in to visual information in comprehending speech. [Texts about speechreading stress the need to develop visual attention.]

She went on to talk about children in their parent-infant and preschool programs, and how she incorporates spoken English into their day:

Parents were at first concerned that their hard of hearing children would lose what speech they had when they entered a preschool where Sign Language is used primarily. But their

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speech seems to be coming along really well. Often I go in when they are playing at centers and spend time talking (no signs) with a child about what he or she is doing. With some children we talk a lot; with others, I play with the words and they like to imitate me (while we are pouring sand, for example, I'll make my voice go from high to low). Some children like what we're doing, but don't vocalize much. Others lose interest and go play in another part of the room and that's OK, too. Another teacher may precede or follow me, or join us in playing, talking about the same kinds of things, using signs without voice. We don't have teachers switching from one mode to another within an activity; we have certain people, certain times, or certain places when we use speech with individual children in natural, interactive ways (Graney, 1994).

Graney had also made observations similar to teachers in the preschool research classes at Kendall School who noticed what appeared to be an initial cessation of vocalization in the more vocal children as they were starting to tune in to visual language, then a return to using speech in some contexts (see Graney, in press).

The Opportunity to See for Themselves

Nancy Topoloski, parent-infant teacher at Kendall Demonstration Elementary School, encourages parents to feel free to expose their infant or toddler to spoken English as well as American Sign Language (but not simultaneously) and to be observant of the child's interactions with Deaf children/adults and hearing children/adults in a wide variety of settings. If parents record early vocabulary and linguistic developments in both spoken and signed language, they often get a clearer idea of what is working for the child. When parents have early contact with Deaf professionals, as well as with speech and hearing professionals who are strong advocates for the child's right to a natural, visual language, the picture takes on a new complexion. Hearing parents who have truly had opportunities to learn Sign Language early and observe their deaf child's communication with Deaf peers and professionals are often extremely perceptive in their observation of what their childneeds. In fact, the parents I have met who had such opportunities, whether in the U.S., Sweden, or Denmark, are sometimes the most adamant in advocating that their child's day include less emphasis on developing the spoken form and more emphasis on information, socialization, and visual input in Sign Language.

One speech researcher from Gallaudet, after observing preschool speech "play" (in a primarily ASL preschool at Fremont, California School for the Deaf), commented to me that when speech and Sign Language are kept separate, it becomes more clear which children have natural predispositions toward speaking. When adults in their environment do not talk and sign at the same time, it becomes much easier for the speech therapist (and the parents) to observe which children's speech is most intelligible, which children are more attentive to sound and spoken language input, and which benefit in interactive settings from wearing hearing aids. (J. Mahshie, personal communication, April 2, 1993). This observation helped explain to me the clarity I saw in Sweden and Denmark about children who were referred to quite young as "deaf" or "hard of hearing." When I asked how interviewees were able to make such distinctions (since early audiograms are not

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reliably predictive of later aptitudes), teachers, psychologists, and social workers said they based them on observations of the children's behavior in different settings.

Speech professionals, teachers, and parents in everyday interactions with Deaf children use language in the way in which the children will find it in the `real world:' either the Sign Language of the Deaf community, or the spoken language of the home or the majority—without supplementation of signs or cues. When this happens, parents and professionals seem able to get a better reading on whether or not individual time spent is resulting in speech the child can really utilize for interactions with hearing people.

A variety of tools used in the U.S. for clarifying ambiguities in lipreading, such as visual phonics or cued speech, may prove to be helpful when the children are a little older in the actual teaching of speech within a bilingual setting. However, the ultimate goal of speech teaching, which is to communicate with individuals in the mainstream who do not know or use such aids to speechreading, must be clearly kept in mind so that the child's learning time is not used acquiring a skill that can only be used with a few individuals in a training context. Some educators, therefore, are beginning to re-assess the value of such teaching tools within the context of an educational environment which utilizes Sign Language for primary, everyday interaction.

Cognitive Academic Language Proficiency

A child's initial preference for attention to visual or auditory input can sometimes be observed relatively early by skilled personnel in parent-infant programs and in the child's home, incorporating information from their ongoing dialogue with the parents. This is important information for parents and teachers, but does not imply, for example, that Sign Language should be dropped as soon as the child shows some predisposition for speaking. Lon Kuntze, formerly the Bilingual-Bicultural Coordinator at California School for the Deaf in Fremont, notes that many of the children that come to their school have sufficient hearing to pick up spoken English that might be used for basic communication as toddlers. Some may have been exposed to simultaneous communication, others to spoken English only. In either case, Kuntze, now a doctoral student at Stanford University, asserts that such children often do not acquire spoken English competence on a deep and comprehensive level needed for academic work, as they do American Sign Language (personal correspondence, August 30, 1994). While spoken English may have been their first language, it does not necessarily remain the primary or dominant language for many hard of hearing children who are given the choice, in part because they may not be able to assimilate complex information or academic instruction through this language. When both languages are available, a Deaf child may initially attend more to one linguistic modality than the other. Nevertheless, understanding and evaluating these early preferences and their potential role in the child's education can be complex. As one audiologist in the U.S. recently observed:

And, we have to remember, even if the child can hear some sounds doesn't mean that child can learn auditorily. Many seem to do much better visually, even though they have

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quite a bit of hearing. The school's primary concern is educating the child. So, despite the fact that some hard of hearing children can get by with spoken English for basic communication, many of these same children do not have the ability to process and really utilize complex auditory information. This is a consideration we can't ignore (K. Caputo, personal communication, August 9, 1994).

Cummins (1980) has identified a very important distinction in levels of language competence in bilingual speakers: basic interpersonal communication skills (BICS) and cognitive academic language proficiency (CALP). BICS is the level of language performance which is sufficient for face-to-face interaction, where the speaker can rely heavily on context, and the content is often somewhat predictable. CALP is the level of language competence needed for critical or abstract thinking, problem solving, and assimilating new information, and is absolutely crucial to academic success. Barnum (1984) refers to the distinction between BICS and CALP in discussing the common misconception that speech skills in deaf or hard of hearing children equal solid language competence.

While it can be informative for parents and teachers to observe a child's performance or surface level competence in both languages, it is very important to be aware of issues related to the deeper linguistic competence needed for high level thought processing, dialogue, and academic work. These issues are not always apparent (nor do they seem important) during early childhood—a time when most communication is heavily reinforced by context and/or is focused on activity and play—and therefore require focused observation and evaluation.

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Keeping Expectations High

Parents' ability to clearly observe their child's progress and trust their intuitions is facilitated when they become conscious that normal developmental and language milestones are well within the reach of Deaf children, and that they don't have to "settle for less" when it comes to their own Deaf child. Through preschools and parent group activities, many parents in Sweden and Denmark are in a position to regularly observe other Deaf children whose linguistic and cognitive development is proceeding "on schedule."

One preschool where expectations are particularly high is housed at the Dövas Hus, the Deaf club in Stockholm. Here at the Skeppargatan School, hearing parents and their children not only get to know Deaf adults, but these parents have frequent opportunities to see other Deaf children carrying on animated conversations with their parents—Deaf or hearing—when they come to pick them up from school. Parents in such settings are not encouraged to disregard normal developmental milestones, to "be patient" as parents of children focusing only on speech are often asked to do, or to set lower goals for their children (K. Lindberg, Skeppargatan Preschool, personal communication, May 14, 1994). Through interactions with Deaf children of all ages at social events, hearing parents of Deaf toddlers can't easily forget about the intense, searching, interactive, playful dialogue that normally characterizes the communication of children between the ages of one and five. They are frequently reminded that children gain much of their knowledge and the answers to their constant questions through language well before they start school. Basic communication is just not enough.

Given this kind of exposure, parents can no longer be satisfied that their child's communication at the age of three is limited to the few spoken words he or she can pronounce or lipread. It becomes crystal clear to parents that it really doesn't matter WHAT language it is—as long as their child can HAVE language, in all its richness and complexity.

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Emphasis on Speech Skills

Parents I met in Sweden and Denmark, and more and more in the United States, do understand the potential benefits and conveniences of speech skills in their child's life. But they also have come to understand some of the inherent limitations for deaf people to comfortable, unencumbered two-way spoken communication. Through their openness to learning from a variety of Deaf adults, hearing parents tend to become aware that, for even the best of lipreaders, spoken interactions further deteriorate when talking with more than one person or in a slightly noisy environment. They want their children to have a language they can "own"; to have relaxed, pleasurable conversations with others on a deep and meaningful level; and to belong to a group of people within which they are not always seen as the one who is different, deficient, or needs an interpreter. They clearly do not judge the success or failure of their child's life or education based on speech and auditory skills. The following quote from Bouvet shows that taking into account the whole child—and the experiences of a variety of Deaf adults—may be very important when parents consider choices about spoken language as the only form of communication for their child:

> *In other words, speech produced without the natural feedback of sound cannot be the privileged place of self-expression and identification for deaf people that it is for hearing people....The following testimony of a 22-year-old woman helps us to understand what the deaf person must deal with in such interactions. This young, congenitally deaf woman with a hearing loss of between 80 and 90 Db, learned at a very young age to articulate so correctly that it would take someone a while to realize that she was deaf. Yet here is what she has to say about growing up:*
>
> *"In play, deafness wasn't a problem. The trouble began when relationships started to revolve around discussions and spoken exchanges. I felt excluded then because no one talked to you 'just for the pleasure of it,' but only to transmit a practical message to you....I am uncomfortable in group discussions, even in friendly get-togethers. Even if someone agrees to be the go-between—and I have lots of friends who do—he will only be able to relate the 'skeleton' of the story, which by then has lost all of its flavor. I laugh to please him, but often it's no longer funny or I haven't understood. Everything I get is in past tense, so I have no chance of responding or contributing" [Armengaud, 1979, p. 266] (Bouvet, 1990, p. 32).*

A Cost-Benefit Perspective

Given what we now know about academic, career, and social success of Deaf people, a paradigm shift is in order. In settings where this has occurred, speech is seen as a complement to—not a necessary component in—a Deaf child's normal development of language and literacy (Hansen, 1990; Wallin, 1988). The importance of perfecting a child's auditory discrimination or pronunciation is viewed in the context of the whole child's development. Parents I have met in such settings place a very high value on literacy and grade-level academic achievement, and felt that time and energy put into

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intensive speech training must be weighed realistically against the potential benefits. Some children benefit greatly from time spent in training, in terms of usable skills. Others benefit only minimally in their prognosis for usable speech. Speech researcher James Mahshie (personal communication, June 11, 1993) characterizes this as a "cost-benefit" view of speech development and teaching: keeping the whole child's development and future functioning in mind as the critical consideration in determining how much effort is reasonable to expend (by both child and teacher) for developing speech skills. As a bottom line, the parents I interviewed seemed to accept the possibility that—with or without intense efforts and long hours of practice—oral/aural skills simply may not play a primary role in their children's life. They were not willing to put learning, socialization, and language on hold or require that their child fail with spoken language before being given opportunities for exposure to Deaf adults and fully accessible visual language.

When it comes to understanding and producing spoken language, it seems investment and outcomes continue to vary greatly from child to child, whether in these countries or in the U.S. Intelligibility scores of deaf children vary considerably depending on a wide range of factors and have shown little or no improvement over many years (McGarr, 1980). Daniel Ling, one of the foremost authorities in North America on teaching speech to deaf children—and whose speech teaching methods are widely used by a large number of oral programs and by speech therapists in other educational settings—summarized studies that yielded the following conclusion:

> *Results of recent studies suggest that overall levels of speech intelligibility are utterly inadequate for oral communication and that typical speech errors of children attending special education for the deaf today are much the same as they were 40 years ago. Advances in acoustic phonetics, speech science, psychology, hearing aid technology, and other related fields appear to have made no significant impact on standards of speech production (Ling, 1976, p. 11).*

Six years later, speech researchers Osberger and McGarr (1982) assert that, "on average, the intelligibility of profoundly hearing-impaired children's speech is very poor," citing a number of studies which show that 'bnly about one in five words they say can be understood by a listener who is unfamiliar with the speech of this group" (p. 268).

This does not imply that we stop trying to increase our understanding of how Deaf children can best learn to speak, or that we deny them opportunities for exposure to spoken language input. Rather, these conclusions suggest that our approaches to deaf infants and toddlers must take into account some long-standing facts about the real possibilities for the average deaf child to develop intelligible speech and use it as a primary mode of communication for academic, social, and later for career purposes.

There is a great deal to be learned about what makes some deaf children's speech more intelligible than others, and what factors would enable us to predict whether or not a child will become an intelligible speaker, with or without amplification and intensive training. After describing numerous studies looking at various kinds of production errors deaf children tend to make, speech experts Osberger and McGarr (1982) conclude:

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> *In summary, we have relatively little information regarding the effect of errors, or combinations of errors, on the intelligibility of hearing-impaired children's speech, nor are we able to predict reliably if a child has the potential to develop intelligible speech (p. 273).*

Because of this relative inability to predict a child's potential for developing intelligible speech, choices about effort expended in the direction of structured teaching should be based on individual children's observed aptitudes, interests, and potential. Such choices must take into account the whole child. In other words, the child's timely development—linguistic, cognitive, and social—deserves center stage, rather than focusing on false hopes.

Residual Hearing

There is widespread acceptance among professionals in the United States of the premise that a child's aptitude for comprehending or producing speech cannot be predicted based on early audiograms. This is clearly explained by the classic text upon which many speech therapists still rely as a model for teaching speech. Ling (1976) equates the part of a young child's hearing that we DO know about with the shoreline of a body of water. He shows a figure in which we can see the edge of a lake or river, as well as the house and trees on the land, but we have no information about what is under the water. He states that the audiogram "merely indicates the dividing line between hearing and not hearing" in much the same way as the shoreline separates land from water:

> *From this figure, it is impossible to deduce the water's depth, warmth, or its suitability for drinking or swimming. Similarly, from an audiogram having the same "shoreline" configuration, one cannot deduce a child's ability to distinguish one frequency from another, to track formant transitions, or to judge one sound as louder or quieter than another. Nor does an audiogram indicate a child's level of tolerance for amplified sound. For these (and yet other) reasons, it is possible for several children with identical pure-tone audiograms to differ greatly in ability to use residual hearing and to discriminate speech (Ling, 1976, p. 24-25).*

Ling notes that not all pure tone audiograms are reliable; audiograms of children tend to vary from one audiometric test to another for a variety of reasons (Ling and Nash, 1975). Osberger and McGarr (1982) explain that, while the degree of a child's hearing loss is an important variable, this measure alone cannot reliably predict the intelligibility of a child's speech; in fact, it was identified as only a fair predictor. Rather, they explain that it is the ability of the child to make use of the acoustic cues available to him (i.e., to recognize phonemes) that is more closely correlated with speech intelligibility than is level of hearing. This ability is something that is determined not as the result of a single test performed on an infant, but based on the child's response to and development of spoken language over a period of time.

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One audiologist from the Sterck School for Deaf children in Delaware explained the widely accepted premise that neither pure-tone measures nor brain-stem testing can provide information that gives a clear prediction about usable hearing and speech until the child is well beyond the age when most children have already acquired language. Even then, tests of perception can be misleading:

> *While we can get information about reception (what the child can detect), we still don't know about perception (what the child can understand) until the child is about 4 years old. In other words, we know something about what sound is getting through, but not what the child will be able to do with it. Even then, a child's ability to identify spoken words is in some cases obscured if that child has an impoverished vocabulary. Many of the tests depend on the child's vocabulary and concept development.*

In other words, at the very early ages, when most children's language learning is well underway, it is not technically possible to get an accurate picture of what sounds a deaf child can discriminate (either through behavioral or brain-stem testing), nor how the child's hearing will facilitate speech production and perception. While this fact is typically shared with parents, it is not necessarily incorporated into actual practice when decisions are made about the first language input to be provided to a deaf infant. Incorporating this information into practice would mean ensuring that each deaf child has access to visual language during the period while his or her facility for auditory language is being observed and/or facilitated.

Instead, parents in the U.S. are often encouraged to focus on speech-based approaches first, or are asked to make a choice at a time when the child is still too young to predict later aptitude for hearing and speech. Parents can undergo extreme (and unnecessary) pressure that can break families apart attempting to make a decision that will affect their deaf child's entire future—based on information that many professionals in the fields of speech and hearing agree is insufficient. Current pressures on parents in the U.S. toward choosing—as a first option—efforts to teach speech (or to talk at all times when signing in English word order) are often fueled by the following popular notion that almost all deaf children have residual hearing that could possibly be utilized toward development of speech. For parents, this statement sends a powerful—and often misleading—message: There is a good possibility your child really can hear to some extent. If you do all the "right" things, that child may also speak.

Hearing or Feeling?

In 1963, speech researchers began to question the concept that usable residual hearing was the norm among Deaf children, according to Arne Risberg, internationally-known speech researcher at Sweden's Royal Institute of Technology. In our interview, Risberg explained his findings, which indicated that the residual hearing philosophy that has shaped much of our thinking (also here in the United States) about deaf children and speech was formed somewhat erroneously on the basis of many children's responses to feeling vibrations—rather than hearing sound (Risberg, Algefors, & Boberg, 1975). Their

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new technology was better able to sort out auditory response vs. tactile response. In other words, in regard to some of the profoundly deaf children, Risberg told me:

> *If you put the headphone on the ear or if you put it on the stomach that doesn't matter, you still get the same audiogram....If you don't call it hearing when it comes through tactile vibrations in the stomach, I'm not sure we should call it hearing when the same thing happens in the ear. (A. Risberg, personal communication, March 9, 1990).*

Many speech and hearing professionals in the United States are familiar with the concept of vibro-tactile "hearing" (Boothroyd and Cawkwell, 1970; Erber, 1972; Nober, 1964). Ling also explains that some children "may actually hear rather than feel sound, but nevertheless may be unable to differentiate sounds auditorily" (1976, p. 290). Even assuming a reliable audiogram can be obtained, Ling explains that these children cannot be diagnosed on the basis of an audiogram. He reiterates that the child's capacity for hearing cannot be evaluated at a single moment in time, but is unveiled gradually. He advises that speech training should be considered as diagnostic therapy, noting that our knowledge of what the child can hear is only reliably determined over time during opportunities to observe the child's ability to differentiate speech stimuli through audition.

Despite limitations inherent in our ability to predict, many professionals continue to focus on giving parents hope by talking about what residual hearing is there. This well-meaning approach often has the unfortunate effect of stalling parents' efforts to provide deaf children with early access to a complete language they can acquire in a timely way.

I do not suggest we stop this process of discovering what each Deaf child will do with speech input, or even that we wait until the child can comprehend all aspects of speech practice before beginning it (as long as the child finds the process enjoyable). Rather, I suggest that whatever hopes parents attach to this notion of residual hearing be accompanied by a realistic perspective about the real outcomes and costs for even the most successful of deaf speakers, and that hopeful advice also be tempered with appropriate alarm that--due to our inability to predict--many children are left *with little or no access to language* during what often becomes a long-term evaluation of their potential for using spoken language.

Many professionals who advise parents of deaf infants in Sweden and Denmark now seem to agree on one major premise: Whatever the infant's level of hearing or future aptitude for speech, the fact that it is even a topic for discussion implies the child's right to early exposure to Sign Language. In other words, if the child's hearing loss was severe enough to be discovered at a young age, the child is very likely to be lacking access to at least some of the spoken signal, rendering speech a deficient language model. In other words, if the child was responding to and developing clear speech "on schedule," the parents and professionals would not even be having this discussion. Rather than setting goals for the infant or toddler that rely on mastery of the thing he or she is failing to

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achieve through natural processes, the alternative is to give the child a "sure thing" upon which to build. As Stockholm University linguist, Inger Ahlgren states:

> *Sign Language is no longer regarded as a threat to the normal development of deaf children, but rather the best possible guarantee for normal development (1989, p.1).*

Deaf and hard of hearing children live in a world full of sounds and speech to which they may or may not have access. Since these auditory attributes are easy to find, efforts in Sweden and Denmark focus on making sure the visual part of this equation (including a language which is completely accessible regardless of hearing levels) is somehow made regularly available in the child's environment. These changes in early approach have gone a long way toward freeing parents to be parents by releasing them from impossible either-or decisions and configuring the environment to let the child's actual behavior guide considerations about language and educational placement.

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Critical Period and Spoken Language

The need to capitalize on a "critical period" for language acquisition is often referred to in the U.S. as a rationale for placing the early focus on speech. The idea of a critical period is based on a hypothesis that there is a limited window in the brain's development when it is acutely predisposed to acquiring language. During this biologically-determined period, children's brains are highly responsive to any natural language in their environment (see Mahshie, 1995, on early natural language input and the brain). When there are no limits to access, children acquire language naturally, through exposure and interaction. They do not need to be explicitly taught (Krashen, 1981). This early, natural acquisition of language is thought by some to be a necessary condition for children to achieve full fluency in language, which also influences their cognitive abilities and their capacity for learning other languages. If they acquire language after that period, their capacity for learning language is believed to have decreased, with adolescents and adults no longer able to call upon the innate mechanisms that work so well for young children.

Acquisition vs. Learning

While there is still some debate about the parameters of this early critical period, we cannot ignore the question that is on the minds of many parents and educators of Deaf children:

> **In approaches based primarily on early exposure to natural signed language, will the child miss the "critical period" for acquiring spoken language?**

This is one of the questions I asked during my first visit to Sweden. One linguistic researcher from the Stockholm University Department of Scandinavian Languages expressed her concern over my assumption that critical period effects would apply to the learning of speech by deaf children. She explained their view (also held by linguists in the U.S.) that the distinction between acquiring and being formally taught a language is central to the discussion of critical period for both first and second languages (K. Svartholm, personal correspondence, January, 1990). The term acquisition is used to refer to the subconscious process through which children acquire their first language, while learning, in this context, refers to the conscious process through which simple grammatical rules and other facts about the workings of the language are understood.

Except in cases where the Deaf child has sufficient auditory processing to acquire the spoken language naturally through everyday processes of interaction, the learning of speech through teacher-directed repetition, feedback, correction, and explanation is not considered to be an "acquisition" process. If the child's hearing loss is severe enough that, with or without amplification, speech must be consciously learned through training and practice, the process is very different in character from other language acquisition processes in children (Risberg, 1968). This training of speech skills to children who have little or no auditory access to the speech signal is considered by researchers in Sweden to be more an intellectual or memorization task than a language learning task (Svartholm,

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1993; I. Ahlgren, personal communication, April 2, 1990). It therefore is not regarded as falling under the purview of the critical period discussion as it applies to first language acquisition. In other words, *except for those Deaf children who can pick up speech through exposure alone, the "critical period" is not considered to be critical by linguists and many educators of Deaf children in Sweden.* What is considered critical for teaching speech is cognitive readiness—and motivation—for the learning task, and access to the spoken signal.

The more experience professionals in these countries have with Deaf children who are exposed to Sign Language early, the more they trust that those who are going to acquire speech naturally through their hearing will acquire it even if they are addressed much of the time in Sign Language. In other words, spoken language models are everywhere. When children do have sufficient hearing and tend to be responsive to speech, the hearing adults in their environment use it with them in many contexts. Studies in early mother-child interaction show that much of parents' early communication with their children is comprised of "automatic" responses that reinforce their child's efforts to communicate (see Bouvet, 1990 for extensive discussion). In other words, if the child is getting enough of the spoken model to start producing it himself, hearing parents and teachers will automatically respond in speech and support that development.

Unless a child is very isolated from hearing society, it is likely that no amount of exposure to Sign Language will keep that child from acquiring the spoken language that is prevalent in society or in his own home, if it is accessible to him through hearing (Axelsson, 1994). Conversely, there is much evidence that those children who do not have enough auditory access to the signal will not learn the spoken language *through a natural acquisition process* no matter how much they are exposed to it. These children will need to be *taught* much of what they will ultimately know about speech.

Access is the Key

If a language is being spoken around them and with them, and their auditory perception and intelligence are intact, most hearing children will, over a relatively short period of time, be able to understand and produce that language (Axelsson, 1994). For both deaf and hearing children, the same is true of signed languages, as long as the children's visual perception and intelligence are intact. If children have full access on a sustained basis to two languages at this early age, they will acquire both—whether signed or spoken (Petitto, 1994b). Conversely, a child who does not have access to the auditory or visual channels through which a language is transmitted, even if that child is addressed regularly in that language, will not acquire that language naturally (see section on early amplification).

The key word is *ACCESS*. We would consider it ludicrous to expect a blind infant to acquire Sign Language simply by being in an environment where it is used by the adults around him. This visual/gestural language—for an infant who does not have the sense of sight—simply does not exist. In much the same way, there are very real biological limits

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for most Deaf children to acquiring spoken language through natural interactive processes. These limits persist even if the child has some hearing, is given amplification, or is taught the language through a step-by-step process that relies heavily on vision for reception. Such a teaching process, by nature, must often involve structured, repetitive practice. In most cases, such teaching cannot capitalize fully on the natural processes of daily interaction and conversation that are so important to linguistic and cognitive development (Vygotsky, 1962), nor does the outcome of that teaching give the Deaf child full access to normal-paced spoken conversation with a group of hearing people. Spoken language is, by nature, an auditorily perceived language.

Access must be considered at the heart of every issue when generalizing to deaf children findings that are based on hearing children who have full auditory input from spoken conversation for natural, interactive acquisition in both their first and second languages. If we recall the widely-researched premise that all language acquisition is based on comprehensible input (Krashen, 1981), it follows that exposing deaf children to more spoken conversation or to earlier spoken conversation when they have limited auditory access to that conversation will result in very limited language development. In order for language to develop, the input simply must be comprehensible to the child. The development of the first language, which contributes to later success in acquiring the second language and other language forms, must not be sacrificed to insufficient input or intervention-type training processes in lieu of natural acquisition.

A Hard Reality

While we are continuing to learn more through research about how best to teach the spoken language to Deaf children who do not acquire it naturally, one thing is clear: It is an extremely complex (and for many children, unattainable) task. To quote Danielle Bouvet, a speech pathologist/linguist from France:

> *Speech is a hard reality with its own laws and requirements. In disregarding or not respecting them because they are not simple, we certainly complicate the lives of the deaf children whom we want to teach to speak. We make them pay dearly for our lack of honesty, sometimes jeopardizing their entire equilibrium. The only way that we can better respond to deaf children and free them from our own false assumptions is to adopt an approach that `recognizes the complexity of things.' (1990, p.34).*

The more conscious learning process Deaf children must employ to master this extremely complex task requires a certain level of cognitive maturity, developmental readiness to attend to the tasks presented, motivation, and some way of gaining access to the form and structure of the language—typically through literacy—since that form and structure is not readily available through the spoken signal or through signs. In other words, deaf children who are learning speech skills, but who do not have enough hearing to acquire the spoken language through natural processes, still need a way to develop competence in

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the language if they are to produce and comprehend spoken structures without auditory models or feedback.

Because it provides a Deaf child access to the structures of the language, the written form of the majority language, acquired by Deaf children through sufficient exposure (R. Andersson, 1994; Svartholm, 1994) offers a basis upon which learned pronunciations of spoken words can be related to the language as a whole. Functional use of the spoken form of the majority language is then considered by some to be more "teachable" for children who do not otherwise acquire it naturally, because these children now bring to the task solid competence in their first language, world knowledge, and knowledge of the written form of the spoken language (Hansen, 1989; Kuntze, 1994). Speech therapists in more and more schools in the U.S. not only support Deaf children's natural acquisition of Sign Language, but also work very closely with teachers to make sure the tasks they are teaching capitalize on concepts the child is able to talk about in Sign Language or can read. Since the children already know (or are in the process of learning) the English language, training in pronunciation is not isolated from the structure of the language. Speech teachers regularly observe that children in such settings have more to talk about.

Early Amplification

For some children, the discussion of teaching vs. early, natural acquisition of a spoken language is not black and white. They may evidence some real aptitude for speech but not enough that their speech would be intelligible without some work. Others might naturally acquire or have more success when taught speech if they could simply hear some frequencies better. Therefore, the question that logically follows the discussion of critical period is whether or not to assist a child's ability to hear more of the spoken language, and if so, at what age? Issues related to these questions and cochlear implants are discussed Mahshie, 1995 and Graney, in press.

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Critical Period and Sign Language

The fear that deaf children may never talk unless they are exposed exclusively to speech during an early, critical period has had a pervasive effect on practices in raising deaf children. Yet, only recently have the concerns of Deaf people and a handful of Deaf and hearing professionals been recognized—serious concerns over the consequences of not exposing Deaf children to Sign Language during the critical period for language acquisition. The question that has motivated so much denial of Sign Language might be appropriately reworded, considering that many deaf children around the world still enter school with very little language of any kind:

> **In approaches where the focus is on early efforts to teach spoken language, will the child miss the "critical period" for acquiring any first language?**

This is the question posed in Sweden by linguists and psychologists who were concerned about the strict oralism that had persisted there for many years. If the critical period is missed because we are exposing the children only to speech while we wait to observe the effectiveness of training or cochlear implants, they pointed out, we run the risk that many children's limited access to the spoken signal will result in almost no early language (other than the idiosyncratic systems they have pieced together to get by). The Sign Language competence they do acquire when they are later exposed to it will be increasingly less proficient depending on the age it was acquired (Hyltenstam, 1992; Newport and Supalla, 1987). This lack of early first language competence, which has been shown to hamper acquisition of any language, results in the children progressing through their education only "semi-lingual" (Cummins, 1984; Paulston, 1977), and lacking the necessary cognitive, academic language proficiency to do well in school. Hence a cycle of failure for many deaf children (and for the schools for the deaf who receive these children after they have missed early chances at language and literacy, children who by this time are well-acquainted with frustration and failure).

While it is hard to imagine a setting in our world that includes no exposure to spoken language, many deaf and hard of hearing children *in the United States today* still grow up in environments that provide no exposure to signed language. Since we don't know and can't accurately predict some very important variables at the earliest stages, the possible consequences of even partial deprivation of accessible language at a critical time were important considerations in the decision to make Sign Language part of the early education of Deaf and hard of hearing children in Denmark and Sweden.

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The Importance of Natural Language

Ongoing use of a language for everyday communication over generations is one of the main ingredients in making natural languages learnable for children—no matter what language community in the world they are born into. This use of a language by a group of people has been identified as a mechanism through which natural languages regulate their level of complexity in a way that reflects the actual potentials of the human brain. Such ongoing use and reduction of complexity by a community of language users plays an important role in making languages "learnable" by small children. In addition to these very real biological considerations about the importance of a community of language users, the idea that children need people of all ages and all walks of life with whom to comfortably converse throughout their lifetime is an extremely important consideration. This consideration is often overlooked in widespread decisions in many countries to base the education and upbringing of Deaf children on artificial sign-based codes, cued speech, and other efforts to manually represent the majority language; as neither communities of deaf nor hearing people use these methods for everyday communication. Linguists argue that none of these manual coding systems, as they are theoretically conceptualized, evidence the very important characteristics common to natural languages. Petitto (1993b), summarizes some of the primary inconsistencies below:

> *Indeed, there is general scientific agreement about the status of these invented sign-based codes: Invented sign-based codes that are used as a pedagogic tool with deaf pupils are not "real" or natural languages. Instead, (i) they are artificially-invented teaching devices that are not used spontaneously by any native deaf community anywhere in the world, (they do not delineate cultural communities), (ii) they are not passed down from generation to generation of deaf people, (iii) they do not demonstrate the formal linguistic changes that natural languages exhibit over time, and (iv) there is substantial evidence that they are processed in the brain differently from natural language, be it spoken or signed [e.g., Bellugi, 1980; Klima & Bellugi, 1979; Marmor and Pettito, 1979]. (Petitto, 1993b, p. 1).*

Furthermore, it is has been repeatedly demonstrated that manual codes for spoken languages (which are widely used in the education of Deaf children in the United States) do not successfully serve as a model for children to learn the language of the Deaf community or the language of the majority (Bergman, 1978; Charrow, 1975; Hansen, 1980b; Hoffmeister, 1992; Hoffmeister & Bahan, 1991; Klima and Bellugi, 1979; Livingston, 1983; Marmor and Pettito 1979; Maxwell, 1987; Quigley and Paul, 1984; Stevens, 1976; Supalla 1986; Svartholm, 1993).

Thus far, studies that *have* correlated the English skills of Deaf children with various forms of manual English have tested children ages 7 and older (typically much older). It is important to remember that, even by the age of 7, most of these children have had many years of exposure to text for the learning of English. In other words, it cannot be reasonably claimed that the knowledge these Deaf children possess of English was acquired through signed codes, unless that knowledge is measured well before they have

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learned to read—that is, during the same time period when very young Deaf children exposed to ASL and hearing children exposed to English are already becoming quite fluent in grammatical use of their own language, and have a broad vocabulary and knowledge of the world.

Finally, researchers continue to find that the constraints of simultaneously communicating in two different modes result in problems for both the communicator and the receiver. Due to inherent differences in spoken and signed languages, it is not considered possible for individuals to produce both an accurate string of manual symbols for units of meaning in the spoken language and many of the features that are syntactically important in the visual mode (Hansen, 1975, 1989; Marmor and Petitto, 1979). While there is a higher rate of success among signers already fluent in a natural Sign Language, it has been demonstrated that these signers still do not represent each English unit of meaning (suffixes, prefixes, etc.) and that artificial sign systems are not effectively produced by hearing signers who are talking at the same time (the people for whom they were designed to use with deaf children). In an effort to speak at a fairly normal rate while signing, even the most proficient signers are likely to modify and delete a significant number of the manual symbols needed to represent the words they are speaking (Baker, 1978; Bergman, 1977, 1979a; Crandall, 1978; Hoffmeister, 1992; Johnson and Erting, 1989; Kluwin, 1981; Luetke-Stahlman, 1988; Mahshie, S., 1995; Marmor and Pettito 1979; Nover, 1994; Swisher, 1984).

As these American research results have been confirmed by studies in Canada, Sweden, France, Denmark, and other nations; professionals in Sweden and Denmark have moved on to what they consider theoretically-sound language principles; parents today are advised that the children's model for early exposure to visual communication should be the natural signed language of the Deaf community, and the model for aural communication should be the natural spoken language of the majority (or the home). Artificial or educationally-based attempts to represent spoken languages manually are not considered to be comprehensible language input in either modality (Mahshie, S., 1995, for extensive discussion of natural language and evidence calling use of sign-based codes into question as sole input for acquisition of a first language, as well as of their potential use in study of spoken language grammar later in a child's school career).

Parents are seen as the most important communicators in their Deaf child's early life, but not as the sole language models. While many parents become very skilled at communicating visually in a short time, it is also seen as crucial to have fluent language models who use a natural Sign Language *as their primary language for daily communication* present in the child's environment as much as possible. Such individuals not only carry with them at all times a form of language that is fully "learnable" by very young deaf and hard of hearing children, but also possess ways of using that language that hearing parents quickly notice really work to maintain their child's interest, attention, and comprehension.

Deaf adults' presence also supports parents' developing these same pragmatic skills and understanding of deaf children, as well as bringing their own Sign Language skills to a

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real conversational—not just sign class or baby-talk—level. When both parties are present in a deaf or hard of hearing child's early education and upbringing, the child's timely acquisition of language need no longer be a "wait and see" proposition.

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